

Farmhouse Fears

Outdoor Pesticides Come Inside

Multiple studies have described the widespread presence of pesticides in American residences, while another body of research indicates that pesticides used in agriculture find their way into farmworkers' homes. Exposure to in-home pesticides generates concern about potential health effects, particularly for children because their small size and typical behaviors (such as playing on the floor) can translate to high doses. Additionally, because children are still growing and developing, they are more vulnerable to detrimental effects. According to a recent study led by Sara A. Quandt of the Wake Forest University School of Medicine, migrant farmworkers' children may be especially at risk for exposure to a wide array of pesticide [EHP 112:382–387].

Quandt's team worked in southern Virginia and western North Carolina, where they recruited 41 migrant farmworker families to participate in their study, which is part of a larger NIEHS-funded project. Each household had at least one child aged 1–7 years living there. Quandt and her colleagues hypothesized that migrant farmworkers' homes would likely contain multiple pesticides because these workers are often the ones who apply chemicals, and they perform hand labor in fields treated with pesticides. In addition, these families often live close to the fields and are thus affected by pesticide drift. Migrant housing also is frequently in poor repair and therefore more likely to require pest control.

The researchers took wipe samples of floors, toys, and children's hands, and analyzed the samples for 8 pesticides used in local farming ("agricultural pesticides") and 13 that have been widely found in American homes ("residential pesticides"). Further data were collected through an interviewer-administered questionnaire and observations of the home and its surroundings.

At least 1 residential pesticide was detected in 39 of the 41 homes, and 20 homes had traces of 1 or more agricultural pesticides. Pesticide residue on children's hands or toys was strongly associated with there being pesticides on floor samples. Many homes contained multiple pesticide residues. For example, 33 homes had 3 or more residential pesticides; 12 of these contained traces of 6–8 pesticides. Of the 21 pesticides for which the researchers tested, 3 were not found in any home.

Significant predictors of agricultural pesticides appearing in homes were proximity of the residence to fields and farmworker application of pesticides at work. Only field proximity appeared significant when multiple potential predictors were considered. Homes in poor repair, which were judged more difficult to clean, had a greater likelihood of containing residential pesticide residues.

More information is needed about pesticide exposures experienced by farmworkers and their families. Further research should include such factors as the work environment, workers' safety and hygiene practices, and residential pesticide application practices. This information would allow better understanding of the potential health risks to farmworkers and their families and aid in developing strategies to avert them. —Julia R. Barrett



A marked disadvantage. A combination of factors makes children of migrant farmworkers more likely to encounter multiple pesticide exposures at home.

Children's Exposure to ETS

Race and Ethnicity Matter

Parental smoking at home has long been known to increase children's exposure to environmental tobacco smoke (ETS). It is also recognized that adults' smoking rates vary by ethnicity, race, and immigrant status. But little is known about how these factors combine—whether race and ethnicity are risk factors for childhood exposure to ETS. Now Ken Sexton and colleagues at the University of Minnesota report that elementary school-age children in two economically disadvantaged neighborhoods show consistent differences in ETS exposure by ethnicity and race [EHP 112:392–397].

The children were participants in the School Health Initiative: Environment, Learning, and Disease study of multiple environmental exposures, and lived in urban neighborhoods in Minneapolis. The children's primary caregivers were asked questions about their smoking behavior and their children's health. In the winter of 2000 and again in the spring, the children gave urine samples at school. During the 48 hours before the collection of urine samples, the children, aided by caregivers, interviewers/translators, and field technicians, kept time-activity logs recording the amount of time they spent in the presence of active smokers.

The results showed a clear pattern of differential ETS exposure, with African-American children receiving the highest average exposure.

Significantly, nearly half of the African-American children lived in homes where the caregiver smoked, and more than 40% of those children were exposed to ETS. Exposure was moderately low for Hispanic children (8.5% lived in homes where their caregivers smoked) and lowest for Somali immigrant children, none of whom lived with caregivers who smoked. Less than 20% of children in the “other” category (white/Southeast Asian/Native American) lived in homes where their caregivers smoked.

In shedding new light on ETS exposure among children of low-income families, the research underscores mounting evidence that socioeconomic status, ethnicity, and race can be risk factors for children’s exposure to many pollutants. This study, the authors write, demonstrates the importance of considering smoking prevalence by ethnicity and race when conducting child ETS exposure studies.

Another important finding may lessen the cost and difficulty of future studies. The researchers found that relatively inexpensive metrics can be effective in screening children for ETS exposure. The research is the first to compare four metrics: inexpensive baseline questionnaires, time-activity logs, and two relatively expensive biomarker measurements, urinary total cotinine and urinary metabolites of the tobacco-specific lung carcinogen NNK. All four metrics suggested that a substantial number of the children were routinely exposed to ETS, and three—questionnaires, logs, and urinary cotinine—showed consistent differences by race and ethnicity. Moreover, the questionnaires and logs indicated that reducing adults’ smoking at home would help reduce children’s ETS exposure. —**Laura Alderson**

The Demographics of Decline Populations Age Differently

Health differences between racial and ethnic groups often have complex causes that range from genetic risk factors to socioeconomic status (SES) to exposure to environmental toxicants. Cognitive decline in middle-aged and older people can be a particularly difficult problem to address in this regard because of the sheer number and interconnectivity of its contributing factors. An early report from the ongoing Baltimore Memory Study unveils new epidemiologic techniques to control for these complex factors, but suggests that further refinements will be necessary [*EHP* 112:314–320]. The current report, by Brian S. Schwartz and colleagues at The Johns Hopkins University, is the first from this study and describes baseline data from the initial study visit of 1,140 participants.

Health disparities between different racial and ethnic populations are the focus of a broad research program funded by the NIH. The Baltimore Memory Study, which sprang from this program, was prompted by research indicating that, compared to whites, racial and ethnic minorities have worse cognitive function as they age and increased susceptibility to disorders such as Alzheimer disease.

Over the coming years, the Baltimore Memory Study will look at cognitive decline in the context of a daunting list of possible factors,



An awareness of differences. Early findings from the Baltimore Memory Study show significant differences in the way blacks and whites age with respect to cognitive decline.

including environmental agents (such as lead, mercury, and polychlorinated biphenyls), genetic polymorphisms, vascular and other medical factors, behavioral factors, socioeconomic factors, and neighborhood factors. In addition, researchers hope to separate the individual-specific causes from neighborhood-level causes.

Ranging in age from 50 to 70 years, 53% of the participants are white and 42% black; 34% are male and 66% are female. The participants live in 65 neighborhoods in the greater Baltimore area. The first study visit consisted of a battery of neurobehavioral tests, structured interviews, an assessment of SES, and medical assessment for factors such as high blood pressure, diabetes mellitus, vascular disease, and lead exposure. The researchers developed and tested a new instrument that assesses individual and household SES along three dimensions: educational status, occupational status, and household wealth. Household wealth was further broken down into assets and income.

There were significant differences between whites and blacks in terms of health conditions and medication use, both prominent factors that could contribute to differences in cognitive decline. For example, an average of 23% of black participants had a history of diabetes, compared to an average of 11% of whites. On the other hand, an average of 11% of white participants took antidepressant medication, compared to an average of 3% of blacks. Black study participants also had significantly lower neurobehavioral scores than whites, even after the researchers adjusted for SES, health factors, and health-related behaviors.

The researchers found that all of the separate dimensions of SES were independent predictors of neurobehavioral test scores. “Notably,” they write, “few studies have evaluated household assets, which was a stronger predictor of neurobehavioral test scores than was household income.” Schwartz and colleagues suggest that studies may not be able to rely on simple surrogates of SES (such as years of education) when examining racial and ethnic differences. —**Hakon Heimer**